BETTER FRUIT

VOLUME XII AUGUST, 1917 NUMBER 2

SPECIAL FEATURES

Grading Rules and Regulations for Washington, 1917.

Distribution of the Strawberry Crop of 1915.

Cities of Over 3,000 Population in Minnesota, Ohio and Louisiana that have not been sold carlots of apples from the Northwest direct.

Estimates of the Apple Crop for Washington, Idaho, Oregon and Montana.

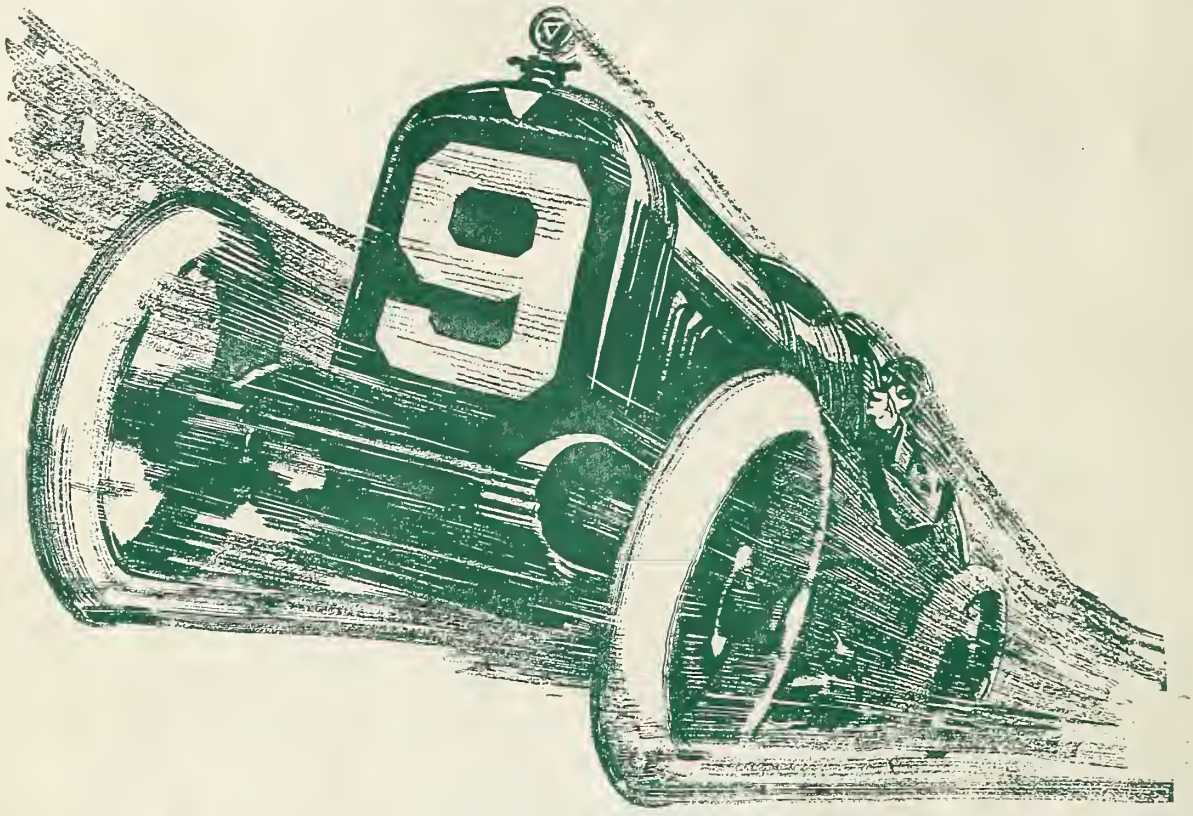
Preserving Fruits and Vegetables by Drying.

Bitter Pit; It's Cause and Control

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, HOOD RIVER, OREGON

Subscription $1.00 per Year in the United States; Canada and Foreign, Including Postage, $1.50. Single Copy 10 Cents

Speedway's Crushing Tests Prove Hudson Super-Six Endurance



Four Hudson Super-Six Specials raced at Cincinnati. All four finished in the prize money: First, in the Free-for-All; Second, Seventh and Ninth in the 250-mile classic.

At Chicago on June 16, Ralph Mulford in a Hudson Super-Six Special broke the American speedway records for 150 and 200 miles. For 200 miles he averaged 104 miles an hour—faster than any car ever traveled such a distance before.

Speedway racing is the most abusive of all motor tests. Every part of a car is subjected to manifold destructive stresses. It is endurance that counts most on the Speedway.

Hudson Super-Six speed tests are in reality endurance tests. It is possible to build faster cars than the Hudson Super-Six Special, but the speedway record of 104 miles an hour for 200 miles, now held by a Hudson Super-Six Special, proves that endurance is more important.

Our interest in racing is not so much to see how fast we can make the Hudson Super-Six. It is to demonstrate motor endurance. It would take too long, at ordinary driving speed, to demonstrate the endurance life of a Super-Six. The speedway in a few hours calls for all the stamina required in years of ordinary use.

No other racing car of prominence so nearly resembles stock production as does the Hudson Super-Six. Practically all of the notable racing cars, and particularly those against which the Hudson Super-Six Special has shown its superiority, were built especially for racing. They bear slight resemblance to the stock production of any factory. Their cost is usually so great that not more than two or three cars are ever built. The Hudson Super-Six is essentially a production car.

The very qualities of endurance that are necessary in racing are the qualities you should demand in the car you buy. It guarantees safety, low maintenance cost and long service.

You can get a Hudson Super-Six in any body type you may desire. There are eight designs to choose from. The carriage detail matches the high quality of the chassis construction.

Phaeton, 7-passenger	$1650	Touring Sedan .	$2175	Town Car Landaulet .	$3025
Speedster, 4-passenger	1750	Town Car . . .	2925	Limousine . . .	2925
Cabriolet, 3-passenger	1950	(*All prices f. o. b. Detroit*)		Limousine Landaulet .	3025

HUDSON MOTOR CAR COMPANY
DETROIT, MICHIGAN

Mathews Gravity Conveyers

FOR FRUIT AND VEGETABLE CANNERS AND PACKERS

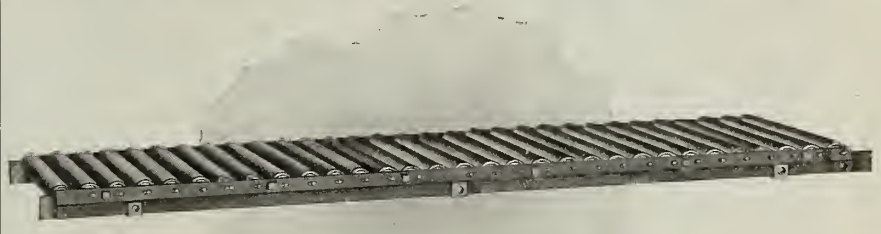
MADE ENTIRELY OF STEEL

NEAT — LIGHT — DURABLE — SANITARY

Manufactured by the Originators and Designers of the First Steel, Ball-Bearing Gravity Conveyer

Portable Roller Conveyer Units

To the right is shown a typical eight-foot unit. Rollers are spaced to suit sizes of packages to be handled. Diameter of rollers, 2¼ inches, cut from cold-drawn, seamless steel tubing, fitted with case-hardened, detachable ball bearings and full-length axles. Lock bars hold all rollers rigidly in place, eliminating use of nuts. Frame rails are of flat bar steel, rigidly braced crosswise and lengthwise. Whole unit construction is strong, neat, compact, and capable of giving almost unlimited service.



Reversible Curves

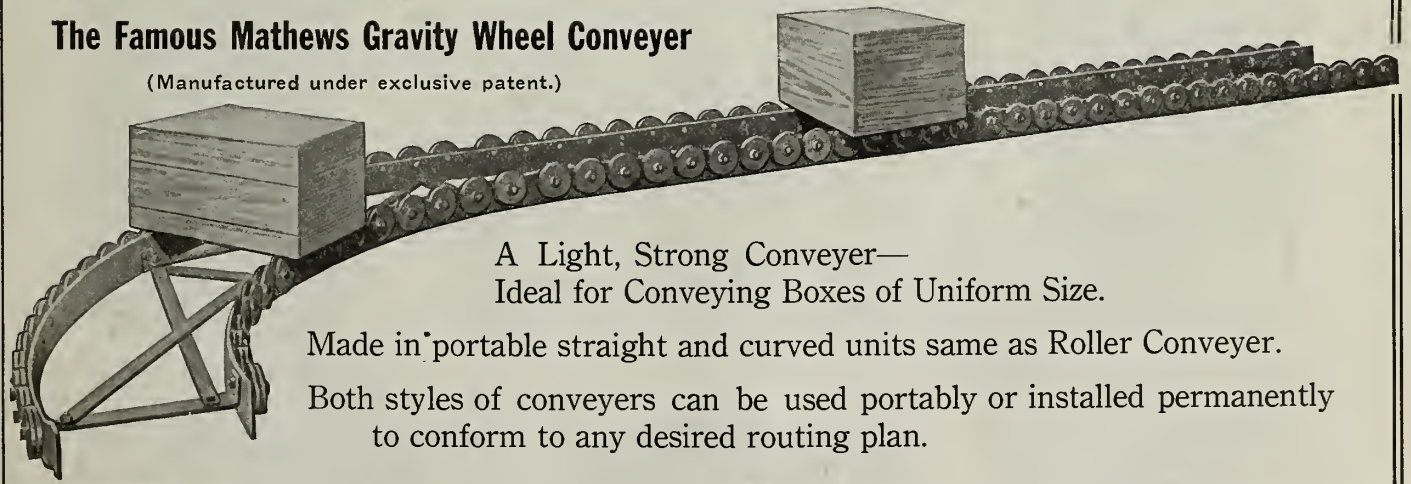
General construction same as straight units. Curves can be made to direct conveyer lines in any desired direction to fit special conditions or requirements. See illustration to left showing typical 90° curve.

Automatic Straight-Lift Elevator
Automatic Inclined Elevator
Gravity Roller Spiral
Spiral Chutes, Etc.

These are useful in providing continuous routing of packages between floors, designed to connect up with gravity conveyer lines.

The Famous Mathews Gravity Wheel Conveyer

(Manufactured under exclusive patent.)



A Light, Strong Conveyer—
Ideal for Conveying Boxes of Uniform Size.

Made in portable straight and curved units same as Roller Conveyer.

Both styles of conveyers can be used portably or installed permanently to conform to any desired routing plan.

IMPORTANT NOTICE

Expert advice and personal service can be had on short notice, by addressing one of our nearest Coast agents. This service is free and without obligation.

We are also prepared to ship all orders for standard roller and wheel conveyer units promptly.

Mathews Gravity Carrier Co.

Factories: Ellwood City, Pa.; Toronto, Ont.; London, Eng.

Address or wire inquiries to our nearest Coast sales office.

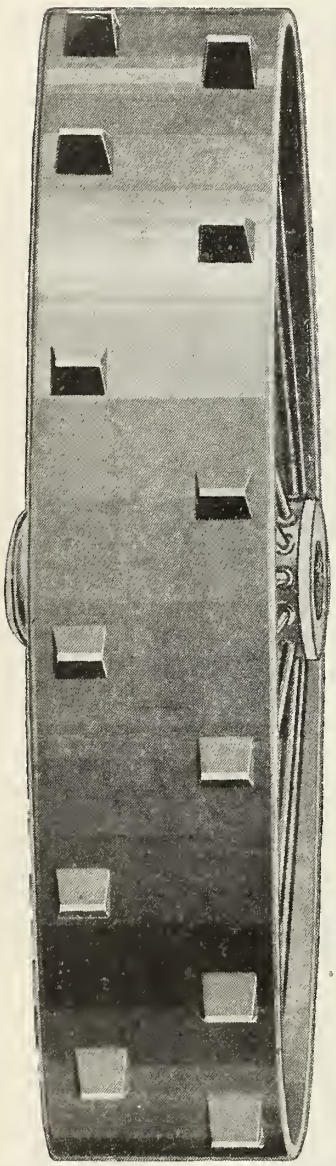
Spokane—Hofius Steel & Equipment Co.
Wenatchee—Wells & Wade.
Seattle—W. R. Hendrey Co., 313 Hoge Bldg.
San Francisco—Mailler Searles, Monadnock Bldg.
Los Angeles—John F. Willard, 315 Broadway.

THE ORIGINAL

2-WHEEL TRACTOR

That Does All Farm Work

WITHOUT HORSES



When you come to buying a tractor, whether for a farm of 80 acres, 280 acres or more, there are a number of questions you will need to ask yourself before you buy. Here are some of them:

—*Will it CULTIVATE as well as plow?*
—*Will it do ALL my farm work without horses?*
—*Will it work on plowed ground without packing the soil?*
—*Will it do the work quicker; easier; and save on hired help?*
—***Is it really a ONE-MAN tractor?***
—*Will it handle as easy as a team of horses, rather than be too heavy, clumsy, and inconvenient?*
—*Do I ride on the tool where I can see the work I am doing, or will I have to have someone run the tractor while I am operating the farm implement?*

The tractor that answers these and all other farm power problems most practically and profitably is the

ORIGINAL 2 WHEEL MOLINE UNIVERSAL TRACTOR

This is the original Two-Wheel Farm Tractor. It pulls two 14-in. plows; will disc, harrow, plant, CULTIVATE all hill and row crops, pull mower; binder, manure spreader, fill your silo—and do all belt work on the average farm. In fact, it will do anything you can do with horses; do it quicker; easier; and with less hired help. It weighs only 2,800 lbs., but all its weight being on its two wheels—*all its weight is traction weight.* The tool you hitch it to forms the rear wheels and you do not have to pull around a ton of needless weight. It will back up with tools attached easier than a team will back. You can turn around in a small space; get close to the rows and the fences. It is the ideal tractor for the farmer because it costs less than four horses; is as powerful as five horses; does more work than seven horses; is inexpensive to operate; and eats only when it works.

Write for our new Tractor Catalog and read how farmers everywhere are solving the power and hired help problems on their farms; how they are changing the drudgery of farming to a profitable pursuit. Learn how you can make your work easier and get it done on time and grow bigger, better crops. Write today.

MOLINE PLOW CO., Dept. 64 **MOLINE, ILL.**

The Moline Line includes: Corn Planters, Cotton Planters, Cultivators, Corn Binders, Grain Binders, Grain Drills, Harrows, Hay Loaders, Hay Rakes, Lime Spreaders, Mowers, Manure Spreaders, Plows (Chilled and Steel), Reapers, Scales, Seeders, Stalk Cutters, Farm Trucks, Vehicles, Wagons.

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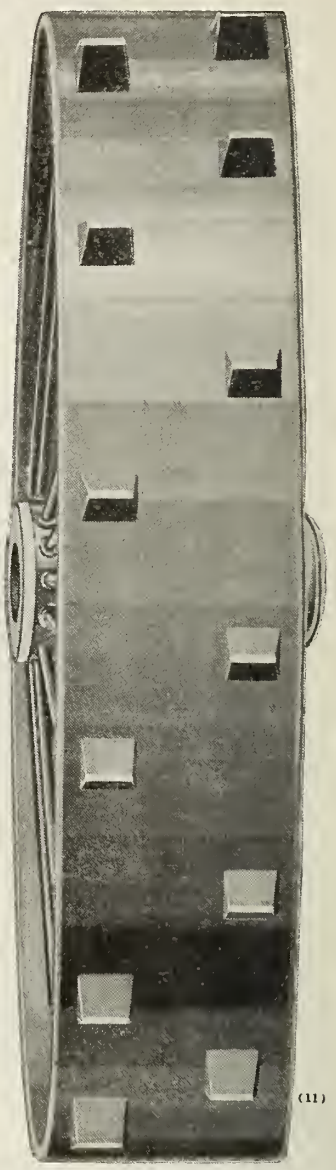
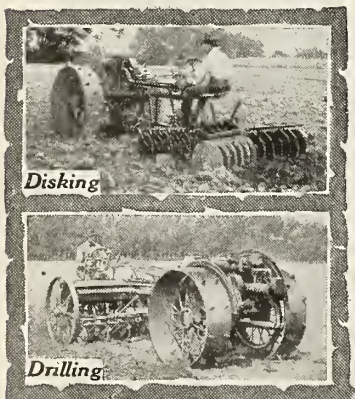
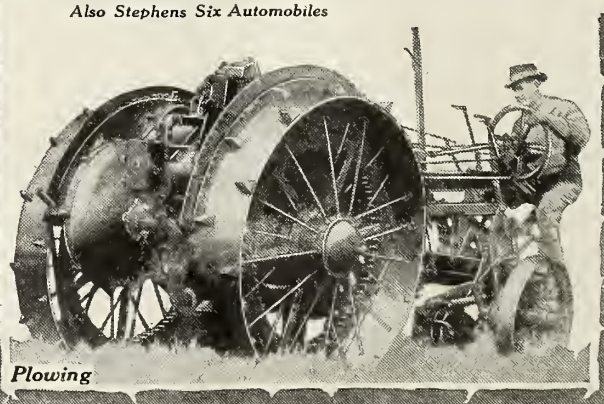


Also Stephens Six Automobiles





BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

Washington Grading Rules and Regulations for 1917

[Adopted under authority of Section 17, Chapter 166, Session Laws 1915.]

First Grade, Grade No. 1 or Extra Fancy Apples are defined as sound, smooth, mature, clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and other physical injuries, scald, scab, scale, dry or bitter rot, worms, worm stings, worm holes, spray burn, limb rub, visible water core, skin puncture or skin broken at stem, but slight russeting within the basin of the stem will be permitted.

Second Grade, Grade No. 2 or Fancy Apples are defined as apples complying with the requirments for first-grade apples, except that slight sunscald or other blemishes not more than skin deep shall be permitted up to a total of 10 per cent of the surface of the apple.

Third Grade, Grade No. 3 or C Grade Apples shall include all remaining apples free from infection excepting that two stings to each apple shall be permitted, and if shipped in closed packages shall be marked "Third Grade or C Grade."

Combination Grade may also include all other apple varieties not provided for in first and second grades.

When second and third grade apples are packed together the packages must be marked "Combination Second and Third Grade."

When first, second and third grade apples are packed together, the package must be marked "Orchard Run," but orchard-run packages must not contain any apples that would not meet the requirements of third grade.

Summer and early fall varieties: Summer varieties such as Astrachan, Bailey's Sweet, Beitigheimer, Duchess, Early Harvest, Red June, Strawberry, Twenty Ounce Pippin, Yellow Transparent and kindred varieties not otherwise specified in these grading rules, together with early fall varieties such as Alexander, Blue Pearmain, Wolf River, Spokane Beauty, Fall Pippin, Waxen, Tolman Sweet, Sweet Bough and other varieties not provided for in these grading rules, as grown in sections of early maturity, shall be packed in accordance with the grading rules covering Fancy Grade as to defects but regardless of color.

The following varieties shall be admitted to the Extra Fancy and Fancy grades, subject to the color requirements herewith specified:

SOLID RED VARIETIES

	Extra Fancy	*Fancy*
Aiken Red	75%	25%
Arkansas Black	75%	25%
Baldwin	75%	25%
Black Ben Davis	75%	25%
Gano	75%	25%
King David	75%	25%
Spitzenberg (Esopus)	75%	25%
Vanderpool	75%	25%
Winesap	75%	25%
Black Twig	50%	15%
McIntosh Red	50%	15%

STRIPED OR PARTIAL RED VARIETIES

Delicious	66⅔%	15%
Jonathan	66⅔%	15%
Stayman	66⅔%	15%
Ben Davis	50%	10%
Hubbardston	50%	10%
Geniton	50%	10%
Missouri Pippin	50%	10%
Northern Spy	50%	10%
Rainier	50%	10%
Rome Beauty	50%	no color
Snow	50%	10%
Wagener	50%	10%
Wealthy	50%	10%
York Imperial	50%	10%
Gravenstein	25%	10%
Jeffrey	25%	10%
King of Tompkins County	25%	10%

RED CHEEKED OR BLUSHED VARIETIES

Perceptibly blushed cheek; tinge color.

Hydes King.
Maiden Blush.
Red Cheeked Pippin.

Perceptibly blushed cheek; characteristic color.

Winter Banana.

YELLOW OR GREEN VARIETIES

Extra Fancy—Characteristic color.
Fancy—Characteristic color.

Grimes Golden.
Yellow Newtown.
Cox's Orange Pippin.
Ortley.
White Winter Pearmain.
Yellow Bellefleur.
Northwestern Greening.
Rhode Island Greening.

All apples packed otherwise than according to the foregoing rules shall be accompanied by a printed description of the contents on each package.

The term "worm stings," as used in the above rules, shall be interpreted to mean "healed-over stings," as the healing over of the sting is the only evidence we have to show that the so-called sting is not infected.

Grading rules recommended by regularly elected delegates to the Apple Grade and Pack Conference held in Spokane, November 25th, 1916, and adopted by the Advisory Board of the State Department of Agriculture, January 11th, 1917.

APPLE PACK

Style of Pack	*No. in Box*
2x1 diagonal pack 5x5 long, 3-tier deep	45
2x1 diagonal pack 5x6 long, 3-tier deep	50
2x2 diagonal pack 3x3 long, 4-tier deep	48
2x2 diagonal pack 3x4 long, 4-tier deep	56
2x2 diagonal pack 4x4 long, 4-tier deep	64
2x2 diagonal pack 4x5 long, 4-tier deep	72
2x2 diagonal pack 5x5 long, 4-tier deep	80
2x2 diagonal pack 5x6 long, 4-tier deep	88
2x2 diagonal pack 6x6 long, 4-tier deep	96
2x2 diagonal pack 6x7 long, 4-tier deep	104
2x2 diagonal pack 7x7 long, 4-tier deep	112
2x2 diagonal pack 7x8 long, 4-tier deep	120
3x2 diagonal pack 4x5 long, 5-tier deep	113
3x2 diagonal pack 5x5 long, 5-tier deep	125
3x2 diagonal pack 5x6 long, 5-tier deep	138
3x2 diagonal pack 6x6 long, 5-tier deep	150
3x2 diagonal pack 6x7 long, 5-tier deep	163
3x2 diagonal pack 7x7 long, 5-tier deep	175
3x2 diagonal pack 7x8 long, 5-tier deep	188
3x2 diagonal pack 8x8 long, 5-tier deep	200
3x2 diagonal pack 8x9 long, 5-tier deep	213
5 straight pack 8 long, 5-tier deep	200
5 straight pack 9 long, 5-tier deep	225

The standard size of an apple box shall be 18 inches long, 11½ inches wide, 10½ inches deep, inside measurement.

Dimensions of apple-box materials:

Ends—⅞x10½x11½, 2 pieces.... 20 to bundle
Sides—⅞x10½x19¾, 2 pieces.... 40 to bundle
T. & B.—¼x5½x19¾, 4 pieces...100 to bundle
Cleats—⅞x⅞x11½, 4 pieces.....100 to bundle
32 6d nails commonly used per box.

RULES FOR ESTIMATING PAPER AND CARDBOARD

	Apples lbs.	*Pears lbs.*	*Peaches lbs.*
Wraps for packing 100 bxs	50	50	25
Lining for packing 100 bxs	7½	..	..
Cardboard for packing 100 boxes	16	..	..

RULES FOR USE OF PAPER

Apples—
Use 8x8 for 188-200-213-225 packs.
Use 9x9 for 175-163-150-138-125-113 packs.
Use 10x10 for 112-104-100-96-88 packs.
Use 11x11 for 80-72-64-56 packs.
Use 12x12 for 50-48-41-36-32 packs.

Pears—
Use 8x8 for 210-228-245 packs.
Use 9x9 for 193-180-165 packs.
Use 10x10 for 150-135-120-110-100 packs.
Use 11x11 for 90-80-70-60 packs.

Peaches—
Use 8x8 for 96-90 packs.
Use 9x9 for 84-78-72-65-60 packs.
Use 10x10 for 55-50-45 packs.
Use 11x11 for 40-36 packs.

Cement-Coated Nails, per keg—
4d, 55,000; 5d, 39,700; 5½d, 31,000; 6d, 23,600.

[Section 15, Chapter 166, Session Laws 1916.]

It shall be unlawful for any person to import into this state, sell, barter, or otherwise dispose of or offer for sale or have in his possession for the purpose of sale or barter any fruit which is or has been infected with peach mildew, peach-twig borer, San Jose scale or other insect pests or the larvae of the codling moth or peach-twig borer, and the fact that any fruit bears the mark of any such scale insect or is worm eaten by any such larvae, shall be conclusive evidence that the fruit is infected, within the meaning of this section, provided that nothing in this section shall be construed to prevent the grower of such infected fruit grown within the State of Washington from manufacturing the same into a by-product or selling and shipping the same to a by-product factory.

The Orchardist's Opportunity

To every owner of an orchard which is not yet in heavy bearing, there is offered an unusual opportunity. In some orchards from one to five years of age tilled crops can be grown to good advantage. Potatoes, beans, cabbage, squash, cauliflower, Broccoli and tomatoes are among the best to be planted. Berries, such as strawberries, are also good. By regulating the work some of these crops may be planted in early spring, some in July and some even in the early fall. Strips of vetch and hay can also be grown to advan-

tage, but where this is done strips should be left close to the trees and given good tillage.

Where hogs are kept on the place large quantities of turnips, such as Cowhorn and Aberdeen and vetch may be planted. Vetch seed should be drilled in the latter part of July to make good feed for the fall and early winter.

In orchards from six to eight years of age which have not yet reached heavy bearing, grain and hay crops are preferred to horticultural crops unless the trees are undersized and do not show sufficient vigor. Many orchards at this age show too much vigor and have a tendency to produce too much wood, and then the handling of a grain crop will tend to harden the trees and cause them to produce fruit buds. Barley and oats are two of the best grains to consider. Narrow strips may be left close to the trees and tilled, but if the trees are unusually vigorous no tillage of these strips is desired. Oat hay would be a very desirable crop to produce. As a summer crop drill in large quantities of turnips, rape and vetch to be used as hog feed. If desired the barley can be easily harvested by hogs.—C. I. Lewis, Chief of Division of Horticulture, Oregon Agricultural College, Corvallis, Oregon.

Washington Fruit Crop Report, July, 1917

Department of Agriculture, Division of Horticulture, Olympia, Washington

IN collecting the data for this report, the District Inspectors and their deputies in their various districts, have very carefully studied the conditions before making their estimates. They have consulted with growers, shippers and representatives of various organizations, who have given them much valuable assistance which has aided us in getting as accurate an estimate of the crop prospects as possible. In October, 1916, the entire Northwest was visited by a freeze which in some places did a considerable damage to unpicked fruit. Trees in many places show the results of the freeze by being badly killed back. Based upon the excessive bloom of this season reports were given out predicting a very heavy crop of all tree fruits, but due to cold, unseasonable weather at blossoming time, indications show a poor pollenization which was followed by an extra heavy "June drop." The season has been cold and backward, the blooming period being about thirty days late. Thorough spraying for the control of the codling moth and apple scab in infected sections is being done.

Yakima Valley District

The Yakima Valley district, including the Counties of Yakima, Kittitas and Benton, promises about the same yield as in 1916. The blight is active in some parts of the valley and it may shrink the present estimates somewhat. The estimate from this district, in carloads, is as follows:

	Apples
Yakima County—	
North Yakima	2,500
Selah and Naches	2,200
Zillah	2,100
Grandview	1,150
Sunnyside	200
Benton County	472
Kittitas County	180
Totals	8,802

Wenatchee District

The Wenatchee district comprises Chelan, Okanogan, Douglas and Grant Counties. In 1916 in this district there were 1,962,870 trees five years of age or older. The number reaching five years of age in 1917 is 340,769, making a total of 2,203,639 trees five years old or older. About 4,000 acres, or 320,000 trees, have been abandoned or taken out, leaving a total of 1,883,630 trees of bearing age in 1917. The average yield per tree for the past four years has been:

Year	*Boxes Per Tree*
1913	3.05
1914	3.00
1915	2.65
1916	2.41

Making a four-year average of 2.71 boxes per tree.

Present indications give an estimated crop of about the same yield as 1916, hence figuring 1,883,630 trees at 2.41 boxes per tree and 650 boxes per carload, it gives a total of 6,983 carloads for 1917.

Walla Walla District

The Walla Walla Valley promises a normal crop. The "June drop" did not seem to be as heavy in this section, and District Inspector C. W. Gilbreath reports a probable shipment from that section of the following numbers of carloads:

	Apples	*Cherries*	*Peaches*	*Pears*	*Prunes*
Asotin County	15	80	60	10	25
Columbia County	175	2	15	3	5
Garfield County	15	6	45	5	10
Walla Walla County	325	30	10	10	250
Snake River section of Whitman County	10	50	75	15	15
Totals	540	168	205	38	305

Spokane District

The weather conditions are responsible for the heavy shrinkage of the fruit crop in the eastern part of the state, yet we occasionally find an orchard in that section which has a full crop. The reports from District Inspector H. W. Samson of Spokane indicate that Ferry, Lincoln, Pend Oreille, Spokane, Stevens and Whitman Counties will not ship to exceed 600 carloads of all fruits in 1917. The quality promises to be good.

Peaches	*Pears*	*Prunes*	*Cherries*	*Apricots*
250	225	42	40	..
100	100	10	14	..
900	490	111	35	..
75	25	10	16	..
45	10	6	4	..
225	121	2	7	2
..	..	..	..	..
1,595	971	187	116	2

In Klickitat County it is estimated that there will be 150 cars of apples, 15 of peaches, 100 of prunes, and 5 of pears.

In Skamania County there will probably be 30 carloads of apples.

In King County there will probably be about 100 carloads of apples, 30 of cherries, 6 of peaches, 8 of pears, 45 of prunes, and 2 of quince.

About the first of August another report will be issued in which we hope to give further detailed data regarding the estimated fruit crop, and also some information as to the planted acreage of potatoes, beans, peas and corn. Many of the leading commercial vegetables will be included. In some sections some fruits still continue to drop, but by August 1st this condition will have ended, and when the crop is normal growers will have the crop thinned, so that we hope to get a close estimate of the crop. In comparison with the 1916 crop the estimates are as follows:

	1916 Carloads	*1917 Carloads*
Apples	16,955	16,925
Pears	1,639	1,247
Peaches	1,265	1,946
Grapes	25	30
Prunes	511	650
Apricots	87	165
Cherries	213	377
Strawberries	394	300
Other berries	417	110

Estimates for Other Northwestern States

Hood River	1,200 cars
Western and Southern Oregon	1,000 cars
Eastern Oregon	300 cars
Idaho	2,000 cars
Montana	500 cars

[Editor's Note: It must be taken into consideration the data for the State of Washington was furnished the inspectors during the month of June. This early in the year it is very difficult to estimate very accurately, as every fruitgrower knows from experience. While the total tonnage from these figures amounts to 21,955 cars, the editor rather inclines to the opinion that the total crop of commercial apples of the Northwest will be nearer around 18,000 cars. This figure may be increased or decreased later in the season, in accordance with the development of fruit, that may or may not suffer seriously by loss from disease or pest. At the present time it is too early to estimate how serious the damage may be later, either from fungus or codling moth.]

Seeks Far East Markets

To help American fruit shippers obtain Pacific outlets for their products during the coming season, the Office of Markets and Rural Organization is sending a representative to China, Japan, Australia, the Philippines and Eastern Siberia to investigate the marketing of American fruit in these countries.

The need of expanding the Pacific outlet is made evident by the closing, practically, of the English and Scandinavian markets to which the United States has previously forwarded large quantities of fruit, particularly apples and pears. The representative, Anson Penfield Bateham, special investigator in foreign fruit markets, sailed from Vancouver June 7. The Bureau of Foreign and Domestic Commerce, of the Department of Commerce, and the Consular Service, of the Department of State, will co-operate with the Office of Markets and Rural Organization in the investigation through the commercial attaches and the various consular officers in the countries to be visited.

More Information On Fruit Distribution

By E. H. Shepard, Editor

Distribution of apples in the Northwest, showing cities of over 3,000 population in Minnesota, Ohio and Louisiana that have not been sold apples from the Northwest in carlots.

Exery subscriber of BETTER FRUIT will recall the article appearing in the in the July edition on the "Distribution of the Apple Crop of the Northwest," showing the towns and cities which had been sold apples in carlots direct, giving the percentage of the total number of towns sold in the United States—or, in other words, there are 35,085 towns of over 3,000 population, of which 611 have been sold in carlots direct. A list of the towns sold appears in the July edition. Space will not permit in BETTER FRUIT the publication of all of the towns not sold in the United States, but as an example we publish a list of the towns not sold of over 3,000 in Minnesota, Ohio and Louisiana. In Minnesota there are 34 towns of over 3000 population, of which 13 have been sold, 31 not sold; in Ohio 117 towns of over 3,000 population, of which 10 have been sold, 107 unsold; in Louisiana there are 22 towns of over 3,000 population, of which 4 have been sold and 18 not sold. These three states are a fair example of sections—Minnesota being one of the Northwestern States, Ohio a Middle State and Louisiana one of the Southern States. Similar conditions prevail in nearly all of the other states. Comparatively few apples are grown in the State of Minnesota. Ohio has a large number of manufacturing towns, which are very prosperous. Louisiana is a Southern State, where apples are not grown, most of the fruit being citrus. The large quantity of apples consumed in New Orleans shows that people in sections where citrus fruits are produced desire apples just the same. Every one of the Southern States should be a good market for Northwestern apples if properly worked. The list of towns, as given below, are taken from the American Newspaper Annual and Directory, Copyright Edition 1917, published by N. W. Ayer & Son, Philadelphia:

Minnesota	*Ohio*
Anoka	Barnesville
Ely	Bridgeport
Fairmont	Bryan
Hastings	Byesville
International Falls	Celina
Lake City	Crestline
Marshall	Crooksville
Montcvideo	Dennison
New Duluth	Eaton
Northfield	Elmwood Place
Pipestone	Greenfield
Princeton	Gukksbiri
St. Peter	Keetibua
Two Harbors	Lisbon
Waseca	Lockland
Austin	Logan
Bemidji	London
Chisholm	Marysville
Cloquet	Miamisburg
Eveleth	Middleport
Faribault	Mingo Junction
Little Falls	Napoleon
New Ulm	New Lexington
Owatonna	Oberlin
Red Wing	Orrville
South St. Paul	Pomeroy
Hibbing	Port Clinton
Mankato	Sebring
Rochester	Shelby
Stillwater	Toronto
Virginia	Uhrichsville

Ohio—Cont'd	*Ohio—Cont'd*
Upper Sandusky	Coshocton
Wadsworth	East Cleveland
Wauseon	Elryia
Wilmington	Findlay
Ashland	Fostoria
Athens	Fremont
Bellevue	Ironton
Bowling Green	Lancaster
Bucyrus	Massillon
Circleville	Middletown
Cuyahoga Falls	Mount Vernon
Defiance	Piqua
Delaware	Sidncy
Delphos	Tiffin
Dover	Warren
East Palestine	Ashtabula
Galion	East Liverpool
Gallipolis	Hamilton
Greenville	Lima
Jackson	Lorain
Kent	Mansfield
Kenton	Marion
Martins Ferry	Norwood
Nelsonville	Portsmouth
New Philadelphia	Sandusky
Niles	Steubenville
Norwalk	Zanesville
Painesville	Springfield
Ravenna	*Louisiana*
St. Marys	Donaldsonville
Salem	Franklin
Struthers	Jennings
Troy	Kentwood
Urbana	Minden
Van Wert	Opelpusas
Wapakoneta	Plaquemine
Washington	Ruston
Wellston	Thibodaux
Wellsville	Crowley
Wooster	Gretna
Xenia	Houma
Alliance	Lafayette
Barberton	Morgan City
Bellaire	New Iberia
Cambridge	Baton Rouge
Chillicothe	Bogainsa
Conneaut	Monroe

Distribution of strawberries in carlots in Oregon and Washington.

The total number of strawberries reported shipped by the government from Oregon during the year 1915 was 193 cars; from Washington 142 cars. The following is a list of the cities to which carlots were sold direct in 1915, showing the destination of 191 cars, which probably includes only the full carlot shipments, not including less-than-carlot shipments, local shipments and home consumption, or the strawberries going to the canneries. Forty-six towns were sold in carlots in the year 1915:

	Cars		*Cars*
Billings, Mont.	4	Livingston, Mont.	1
Bismarck, N. D.	2	Minneapolis, Minn.	15
Brandon, Man.	6	Moosejaw, Sask.	1
Butte, Mont.	16	Omaha, Neb.	10
Calgary, Alta.	1	Pocatello, Idaho.	4
Cheyenne, Wyo.	1	Portage La Prairie, Man.	2
Chicago, Ill.	11	Rugby, N. D.	1
Crookston, Minn.	4	St. Louis, Mo.	1
Deadwood, S. D.	3	St. Paul, Minn.	6
Denver, Col.	2	Salt Lake. Utah.	2
Detroit, Mich.	3	Saskatoon, Sask.	1
Devils Lake, N. D.	1	Sioux City, Iowa.	5
Duluth, Minn.	7	Sioux Falls, S. D.	2
Edmonton, Alta.	1	Springfield, Ill.	2
Fargo, N. D.	7	Staples, Minn.	1
Grafton, N. D.	5	Thief River Falls, Minn.	3
Grand Forks, N. D.	8	Valley City, N. D.	1
Grand Island, Neb.	1	Vancouver, B. C.	1
Great Falls, Mont.	3	Wahpeton, N. D.	1
Helena, Mont.	3	Watertown, S. D.	8
Kansas City, Mo.	2	Winnipeg, Man.	25
Laramie, Wyo.	1	Yorkton, Sask.	1
Lewiston, Mont.	2		
Lincoln, Neb.	3		

The strawberry crop of the United States and Distribution of strawberries from the Northwest.

The following statistics show the number of carloads of strawberries shipped from every state in the Union where strawberries are grown in quantity. It must be borne in mind that the number of cars in some states, as reported, includes less-than-carload shipments, and in other states the number of cars sold does not include less-than-carload shipments, local distribution and home consumption. However, the figures give an approximate idea of the total number of strawberries produced in each state. Strawberries are grown in quantity in twenty-eight states in the Union, a little over half. The total quantity of strawberries produced in the United States is approximately 13,189 cars. The figures are compiled by the Department of Agriculture, in the Office of Markets, Rural Organization. About one-half of the states produce more than Oregon and Washington. The statistics in this article were compiled on the 1915 crop:

	Cars		*Cars*
Alabama	251	Missouri	645
Arkansas	715	New Hampshire.	1
California	418	New Jersay	516
Colorado	9	New York	196
Connecticut	38	North Carolina	837
Delaware	1469	Ohio	34
Florida	508	Oregon (Hood R.)	193
Illinois	262	Pennsylvania	81
Indiana	171	South Carolina	84
Iowa	52	South Dakota	1
Kansas	16	Tennessee	1459
Kentucky	193	Texas	285
Louisiana	1400	Utah	4
Maryland	1942	Virginia	640
Massachusetts	100	Washington	142
Michigan	317	Wisconsin	41
Mississippi	169		
		Total	13,189

Home Drying of Vegetables and Fruit

U. S. Department of Agriculture

DRY vegetables and fruits for winter use if tin cans and glass jars for canning are scarce or expensive. This is the advice of specialists of the U. S. Department of Agriculture, who recently have studied the possibilities of conserving food to meet war needs in spite of any difficulties that may be experieneed in obtaining canning containers. Drying was a well recognized and successful way of preserving certain foods before canning came into general use, the specialists point out, and modern methods make it still more praetieable than formerly, either in the home or by community groups.

Three methods of drying have been found by the Department specialists to give satisfaetory results. These are sun drying, drying by artificial heat, and drying with air blasts, as before an electric fan. Trays for drying by any one of these methods, as well as tray frames for use over stoves or before fans, ean be made satisfactorily at home. Frames and trays for use with artifieial heat may be purehased eomplete if desired.

Home-made trays may be made of side and end boards three-fourths of an inch thick and two inehes wide, and bottom boards of lathing spaced one-fourth of an inch. If desired, one-fourth-inch galvanized wire mesh may be tacked to the side and end boards to form the bottoms of the trays. Frames for use before fans may be made of wood of convenient size. Frames for use with artificial heat should be made of non-inflammable material to as great an extent as possible. As many as six trays may be placed one above the other when artificial heat is used. In drying before a fan the number of trays that may be placed one above the other will depend, to a large extent, upon the diameter of the fan. In drying in the sun, trays as described may be used or the products to be dried may be spread on sheets of paper or muslin held in place by weights.

Vegetables and fruits will dry better if sliced. They should be cut into slices one-eighth to one-fourth of an inch thick. If thicker, they may not dry thoroughly. While drying, the products should be turned or stirred from time to time. Dried products should be packed temporarily for three or four days and poured each day from one box to another to bring about thorough mixing, and so that the whole mass will have a uniform degree of moisture. If during this "conditioning" any pieces of the products are found to be too moist, they should be returned to the trays and dried further. When in condition, the products may be packed permanently in tight paper bags, insect-proof paper boxes or eartons, or glass or tin containers.

RECIPES

Spinach and Parsley

Spinach that is in prime condition for greens should be prepared by careful washing and removing the leaves from the roots. Spread the leaves on trays to dry thoroughly. They will dry much more promptly if sliced or chopped.

Garden Beets, Onions, Carrots, Turnips, Parsnips, Cabbage

Beets: Seleet young, quiekly grown, tender beets, which should be washed, peeled, sliced about an eighth of an inch thick and dried.

Turnips should be treated in the same way as beets.

Carrots should be well grown, but varieties having a large woody core should be avoided. Wash, peel and slice crosswise into pieces about an eighth of an inch thiek.

Parsnips should be treated in the same way as carrots.

Onions: Remove the outside papery covering. Cut off tops and roots. Slice into one-eighth-inch pieces and dry.

Cabbage: Select well developed heads of eabbage and remove all loose outside leaves. Split the cabbage, remove the hard, woody eore, and slice the remainder of the head with a kraut cutter, or other hand-slicing machine.

All the products under this heading should be "conditioned" as described above.

Beet Tops, Swiss Chard, Celery and Rhubarb

Beet tops: Tops of young beets in suitable condition for greens should be selected and washed carefully. Both the leaf stalk and blade should be cut into sections about one-fourth inch long and spread on screens and dried.

Swiss chard and celery should be prepared in the same way as beet tops.

Rhubarb: Choose young and succulent growth. Prepare as for stewing by skinning the stalks and cutting into pieces about one-fourth inch to one-half inch in length and dry on trays.

All the products under this heading should be "conditioned" as described.

Raspberries

Sort out imperfect berries, spread select berries on trays, and dry. Do not dry so long that they become hard enough to rattle. The drying should be stopped as soon as the berries fail to stain the hand when pressed. Pack and "condition."

Summary of Cherry Culture and Production

By E. Bowles, Prosser, Washington

POLLENIZERS are necessary. The Bing cherry is probably as nearly self-sterile as any fruit tree to be found; and unfortunately neither Anns nor Lamberts will pollenize it. We have only three popular commercial sweet cherries; and when these three are planted together, with no other cherry in the neighborhood, the Lamberts and Anns bear light crops and the Bings almost nothing at all. These varieties, with Governor Woods and seedlings, pollenize well, though some seedlings are worthless for the purpose. I am told that Republicans, Tartarians and most sour cherries will pollenize our high-grade cherries; and if so they aret he ones to plant, as they have more market value than Woods. There should be four or five pollenizers to the acre, and set as far apart from each other as possible.

Fertility of the soil must be kept up. I keep from one to two thousand chickens in the orchard and have them distributed to suit the needs of the trees. This gives all the fertilizer the trees can use to advantage. A cherry orchard makes an ideal run for chickens; and chickens, when properly managed, are little hindrance to the crop.

Gummosis is a much-talked-of disease of the cherry. I know nothing of it from the scientist's standpoint, and I am quite skeptical in regard to it. Practically all cherry trees gum more or less, no matter how healthy they may be; but so far as my observation has gone, excessive gumming is a result and not a cause. Scale is a common cause, but there are scores of others. Any condition which brings death to the tree is likely to cause the tree to gum while it is dying.

Smudging is expensive in labor and money. But in my orchard it is a necessity. Six years ago I lost out, but for five successive years have not lost a crop, and I would not think of risking the fruit without this protection. For light frost, a small area can be protected; but for heavy freezes not less than five or ten acres is practical, the larger the easier.

Spring dropping of the fruit is usually due to one of three causes: 1. Failure to pollenize. In this case the dropping is all at once, at the time the shell should burst. You see scores of little ones with now and then a big one that is alive. 2. Frosted cherries at this stage turn black at once and are easily detected. When frosted later they often appear sound for a week or two and then fall. 3. Lack of food causes enormous loss among cherry trees in general. This often continues for several weeks—almost the entire time from blossom to harvest. And you may see dead cherries of all sizes.

Three pests visit the sweet cherry: 1. Scale is probably the worst one, but it is easily controlled with lime-sulphur if the work is thorough. 2. The slug, like the scale, will also hurry a cherry tree to an untimely death, but it is very easy to control with arsenate of lead. The slug hatch about the middle of cherry picking, and must not be allowed to strip the trees. The best method is to spray with the calyx spray for apples. This will tide over the harvest time and usually kills both June and August broods. 3. The black aphis is hard to control, and I have seen no spray or treatment justify the expense. Yet I do not consider the aphis any great hindrance to the cherry industry. Aphis are very bad with the ground weedy or grassy, or dusty ridge in the tree row, or strawy manure near the tree; also follow with the pruning shears. Aphis are seldom serious with clean, level and frequent cultivation and with ample watering, especially near the tree.

Mahaleb or mazzard, which? Of these two roots neither is entirely satisfactory for sweet cherries. Imagine a white-oak on a jack-oak stump, and you see a Bing on a mahaleb as it sometimes appears. The mahaleb is too small; and the union is often imperfect. The mazzard root with the Bing produces scant crops of blossoms, and an

occasional tree is untrue both in flavor and form. I have a theory—only a theory, for I don't know—that a Bing grafted on a Bing seedling would be better than either.

Pruning of cherry trees is a disputed question. The witches told our grandmothers it would kill them. Many still believe it. It is true that it is more difficult than to prune apple trees, but it is almost as necessary. For the young tree, head about three feet high; have no center and no double header. Lead out four or five branches as nearly equal and as near the same place as possible. A cherry tree will not split with its load; and if a center is left the outside branches rob it and make a bad mess later on. The second and third years, I do not clip as with the young apple tree. Cut back only the one or two branches which tend to overtop the others. The two-year-old should spread out like a hayshock; and it will do this if it has a good boarding place, but if starved it adds only a few shoots on the top—no side shoots—and soon loks likc a poplar. In pruning old neglected trees, I prefer to take out a few large branches, doing little or no other cutting. I have never yet injured a trec in this way—get better growth and fruit than to cut out many small limbs. I am not afraid to go to the center of a tree for a fence post. A general clipping over the outside of the tree every year, as we do applcs, is not necessary and is questionable. Some clipping is necesary, but not every year, and it should be reducecl to a minimum.

To flavor a Bing properly, the general point is to keep the tree in vigorous condition with dense foliage. Smooth and glossy leaves in great abundance above the fruit is almost a guarantee of good flavor. The reverse, then, makes poor flavor. But there are many reasons for poor flavor. We clip the growing concord to improve it; but the same treatment ruins the Bing. Liberal fertilizing improves flavor, but an excess often injures it. A peach wants the sun, a cherry wants the shade. A Bing with rough, crinkly leaves, and on a mazzard, produces fruit incurably bad. Fruit that is dry is leathery and strong. Overloaded trces produce a weak flavor. The water necesary for the heaviest tonnage and largest size of fruit sometimes weakens flavor and requires three or four days without any water before picking.

Cultivation or grass? Again I find myself across the public highway. I cannot get results by leaving the ground in alfalfa or clover year after year; have gotten excellent results by sowing clover in June, then plow under the green crop the next May and cultivate for the following two or three years. I depend mainly upon the plow, and run close against the tree trunks.

Solving the Southern Idaho Fruit Problem

Kenyon Green, Twin Falls, Idaho

WITH the arrival of the four years of low apple prices, 1912, 1914, 1915, and followed by the freeze of 1916, the fruit industry of Southern Idaho, and the Twin Falls country in particular, was dealt a crushing blow in its very infancy. With the majority of orchards just coming into bearing, with no nation-widc reputation for its fruit, and with no well-established marketing system worked out, prospects for the fruitgrowers of this district looked very black indeed.

Immediate action was undertaken, however, along several lines, and today there is a universal feeling of optimism which may be notcd among orchard men all over the tract. First, those who were not really interested in the growing of high-grade fruit, who had set out their orchards merely because it was the popular thing pulled their orchards. Approximately twenty-five hundred acres of apple trees in the Twin Falls country have been pulled to the mutual advantage of the owners and the remaining orchard men.

Second, those who retained their orchards, determincd to see the thing through, forgot their dreams of thousand-dollar-an-acre profit, reorganized their apple acreage as a part of a general farming scheme, weeding out all poor varieties, and weak, low-vitality trees.

Realizing that the opening ycars of the twcntieth century saw farm specialization pushed to its cxtreme, these men have studied out the best methods of diversification, which is the opposite of specialization. To thcm fruit growing, which is the most noted of the specialized crops of the Northwest, bccame only onc part of farming and was treated as such.

Belicving that a few years hence the finest and highest priced general farm will be the one with a well-cared-for small orchard several head of good stock, and a variety of general crops, these men have continued pruning and spraying with as great care as though their apples were their most profitable product. Dcparting also from thc old clean cultivation, thesc fruitgrower farmers have worked out a line of inter-crops that arc exceedingly profitable. From his twenty-acrc apple

orchard two and one-half miles from town, a Twin Falls dentist last fall took off eleven bushels of white clover seed to the acre, which at the prices prevailing at that time brought in nearly $4,000.

Following up this plan of a well-balanced general farm, other growers are taking five tons of first-grade alfalfa hay from every acre of orchard, a paying crop when the prices throughout the winter never fall below ten dollars per ton.

The newest problem with which these clover-orchard and alfalfa-orchard men are being confronted is how to grow fancy, brightly-colored apples without the clean cultivation. This is a puzzle which the men in the Twin Falls country are attacking with the same energy as they have shown in meeting their other troubles, and many are already working out a system of plowing up the clover so that it will reseed itself and finish up the fruit in first-class shape every other year, while the alfalfa men will try discing in the third cutting of hay when it is about six inches high, to make a green mulch and hasten the ripening and coloring of the fruit.

Home Canning by One-Period Cold-Pack Method

Canning fruits and vegetables in the home by the one-period cold-pack method is a relatively simple process and can be done with ordinary kitchen equipment and with comparatively little labor. Much of the surplus of the home garden can be saved for winter use by this canning method which is fully described in a special bulletin just issued by the United States Department of Agriculture, Farmers' Bulletin 839, "Home Canning by the One-Period Cold-Pack Method." This bulletin is of special interest and value to all housewives, canning clubs, societies or persons interested in conserving the food supply of the nation. It may be had on application to the United States Department of Agriculture. The bulletin contains very explicit directions for canning practically all of the common garden vegetables, including tomatoes, peppers, sweet peppers, pumpkin, squash, sweet corn, field corn, beans, peas and root vegetables, also various combinations of vegetables. It also includes canning directions for soft fruits and berries, hard fruits as apples, pears, quinces. Directions for the canning of camp rations, meats and soups are given in detail. Each step in the canning process by the one-period cold-pack method is carefully outlined from the preparation of the equipment and the raw materials to the storing of the canned products. A special time table showing how long fruits, vegetables, soups and meats should be scalded, blanched or sterilized is of particular value to the housewife. Various types of home-made and commercial canning outfits are described.

BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association
A Monthly Illustrated Magazine Published in the Interest of Modern Fruit Growing and Marketing
All Communications Should Be Addressed and Remittances Made Payable to

Better Fruit Publishing Company

E. H. SHEPARD, Editor and Publisher

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SUBSCRIPTION PRICE:
In the United States, $1.00 per year in advance
Canada and foreign, including postage, $1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906, at the Postoffice at Hood River, Oregon, under Act of Congress of March 3, 1879.

Direct to the Consumer.—The July issue of BETTER FRUIT contained some interesting figures and statistics in connection with direct shipments in carlots of apples from the Northwest, showing that out of 35,085 cities only 611, or 1⅞ per cent, have been sold. Fruit growers who have not received the July edition should subscribe and request their subscription to include the July number, as a few copies still remain. In the article in July that was one point not brought out with sufficient prominence, that is, the extra handling. Whenever a carload of apples is shipped to some city and jobbed out in the surrounding territory, please bear in mind that the car has to be unloaded, the apples hauled from the depot to the fruit dealer, and from the fruit dealer's place of business back to the railroad and reshipment by rail, making three extra unnecessary handlings, all of which means more or less bruising. In addition to this there is the unnecessary cost, consisting of the cartage from the railroad to the dealer's place of business, 2 or 3 cents; back to the railroad, 2 or 3 cents; extra freight to the local town, 5 or 10 cents, maybe more, and the dealer's extra profit in addition—all of which means 20 to 40 cents, according to conditions, unnecessary expense, so that when the retailer adds his profit on to this extra expense it makes the apples cost the consumer possibly 75 cents per box more than they should.

Spraying for Codling Moth.—Observation in connection with the first brood of codling moth seems to indicate that the brood extended over rather a longer period than usual. In addition, indications also are that the codling moth pest is rather prevalent this year, somewhat more extensive than in past seasons. For these two reasons the fruit grower should study his condition very carefully, and there is no doubt that in many cases it would be advisable for the fruit grower during the balance of the season to make two applications of arsenate of lead instead of one, putting on one early in August and the other late in August or early in September. It should be borne in mind this is a suggestion made applicable in accordance with conditions. Every grower should use judgment. A little later he will be able to decide intelligently whether it is necessary to apply one or two sprays. There is no question about the advisability of urging the grower to do everything he possibly can and spare no reasonable expense to keep his crop free from codling moth.

Diversity.—A short but very interesting article on Southern Idaho gives some practical information in reference to diversity that is worthy of attention of all fruit growers. Southern Idaho, as nearly everyone knows, lost practically all of its fruit by frost in 1916. If it had not been for the fact that fruit growers turned immediately to diversity lines they would hardly have been able to exist during the year. We do not know what the future has in store. Some calamity may hit a fruit district in some form or other in the most unexpected way, so it seems wise to suggest to all fruit growers that, where possible, they should engage in diversity, at least to a sufficient extent to pay running expenses during the year.

This issue contains illustrations on distribution, giving the cities of over 3,000 population in the States of Minnesota, Ohio and Louisiana, showing how great is the number of towns that have not been sold apples in carlots in comparison with the number of towns that have been sold direct in carlots. There is no question that with sufficient selling force to cover the territory thoroughly that the distribution of the Northwestern apple crop can be greatly increased and a great many towns sold in 1917 that have not been sold in the past. The important fact in connection with this statement is that in so doing the selling concerns will reduce the quantity going into the big cities, thereby avoiding congestion, consequently maintaining a higher level of prices, and in maintaining a higher level of prices in the cities it must be borne in mind that by so doing there is no question that a higher level of prices will be maintained in all of the smaller towns and cities.

Not Overproduction but Lack of Distribution.—The article appearing in the July edition of BETTER FRUIT, by the editor, has created more comment than any other article we have published. A number of people have personally informed the editor they had no idea that so few towns had been sold direct, and a number of others, courteous and thoughtful, are commending BETTER FRUIT for its excellent work by letter. It is emphatically apparent that the fruit growers of the Northwest in the favorable reception they have given this article realize greater distribution is the keynote to better prices, and furthermore they are all anxious to see the selling concerns adopt a system this year that will distribute the 1917 crop to more cities than have been sold direct in the past.

Buying Now.—The constantly and continuous increasing prices on all kinds of commodities are sufficient justification for every fruit grower purchasing all articles required in his business at the earliest possible moment. It is advisable to do so for another reason—on account of the shortage of labor and raw materials. In many lines there is a possibility of the grower postponing purchasing too long. He may not be able to purchase in sufficient quantity to meet his requirements. Therefore, the editor of BETTER FRUIT does not hesitate to suggest that every fruit grower should purchase his supply of boxes, ladders, buckets, grading machines, nailing presses, paper, and all other equipment and supplies that he may need in harvesting this year's crop. He should not only make his purchases immediately, but he should haul them out to his packing house just as fast as he can get them there.

Bruised Apples.—A short article by Mr. L. F. Dumas on this subject is worthy of the attention of every fruit grower. When a man has put in a year's labor and expense in producing a crop of apples it is nothing short of insanity to half spoil the crop by bruising in the last thirty days during the harvesting season. Fruit growers, as a rule, do not realize how undesirable a box of bruised apples is unless they have visited some of the cities and gone into the grocery stores and looked into the boxes of apples where it is not an unusual occurrence to see apples so badly bruised that they are almost unfit for use, with at least 25 per cent loss from decay resulting from bruising.

Box Strapping.—The serious loss that is reported every year on export shipments on account of the broken packages is sufficient evidence that something should be done if possible to avoid this loss. While some people have suggested that export fruit should be shipped in heavier boxes, the suggestion is not very practical, for the reason the shipping concerns do not always know when the fruit is packed what boxes will be exported. Box strapping is used for many other commodities, and if used on export boxes of apples there is no question but what it would save the growers very heavy losses each year.

Conservation of Food.—Every fruit grower's wife should consider it her duty to conserve as much fruit and vegetables as possible for winter use by canning and evaporating. By putting up a good liberal supply for home use expenses can be greatly reduced. Putting up your own supply of fruits and vegetables will reduce the quantity of other kinds of foods to be purchased, leaving that much more for others who are not able to do their own canning or drying.

Minimum Carloads.—The serious condition resulting in 1916, and continued in 1917, from the car shortage makes it imperative that the fruit industry should co-operate with the railroads in every way possible in using cars. Arrangements should be such so there will be no delay in loading cars when spotted. Great care should be used by shippers and receivers to see that cars are unloaded immediately at destination, so as to be returnable without delay. Increasing the minimum capacity of cars is equally important. A resolution adopted by a conference of shippers at North Yakima in July was as follows: "Shippers are willing to accept a minimum of 26,000 pounds on cars of soft fruits, peaches, pears and plums, this being 2,000 pounds over the old minimum. They agreed to 31,185 pounds on apples shipped before November 15th. The old minimum was 630 boxes. This was increased seventy boxes on winter varieties, making the minimum carload 700 boxes."

Bruised Apple Losing Proposition

By L. F. Dumas, Dayton, Washington

THE GROWER LOSES

1. Because it has cost just as much to grow that bruised apple as it has to grow the one that is handled carefully.
2. Because it costs more to sort bruised fruit.
3. Because a bruieed apple in a packed box many times ruins its sale and always hurts it.

THE PICKER, THE PACKER, THE SORTER, THE NAILER, AND THE TRUCKER LOSE

1. Because the apple "bruiser" generally gets caught sooner or later and loses his (or her) job.
2. Because the careful person gets better consideration from his employer than does the careless one.
3. Because the grower gets more for perfect apples and therefore can pay more for putting them up.
4. Because the careless person loses his self-respect.
5. Because the careless person loses his reputation for being a good worker, a reputation which directly governs the swell or limpness of his pocket book.

BOTH THE GROWER AND THE EMPLOYE LOSE

Because lack of harmony between the grower and employe caused by careless work causes a distinct loss to both in the results obtained.

THE SELLING ORGANIZATION LOSES

Because it can "get the business" only when it has a superior product.

THE FRUIT BUYER LOSES

1. Because when he invests in bruised apples he is speculating in "damaged goods" and is bound to lose.
2. Because bruised fruit rots in storage, one rotten apple in a box will in time infect others, rotten apples are not saleable.

THE ULTIMATE CONSUMER LOSES

Because he does not get what he pays his money for—good apples. He loses his faith in the apple and will buy some substitute, a thing which will injure grower, worker, seller, buyer, and sometimes the consumer himself.

So let's be careful; let's handle the apples as if they were so many eggs. Remember, rough handling is the unpardonable sin in the preparation of fruit for market; the grower who tolerates it is not injuring himself alone, he is promoting an all-around losing proposition. So let's be careful.

The Washington State Fair will be held at North Yakima, September 17th to 22nd, inclusive. Being in one of the great fruit-growing valleys, and horticulture standing out pre-eminently, it is the duty of every fruit grower to make an exhibit if possible.

Bitter Pit; It's Cause and Control

By Professor D. McAlpine in the Fruit World, Department of Agriculture, Melbourne, Australia

[Editor's Note.—The disease Bitter Pit, so called in Australia, is generally known throughout the Northwest as Core Rot, being the same trouble. Very little has been done in the Northwest to get at the cause of this trouble, and not much in the way of investigation for control. The Australian Government, in connection with the fruit districts of Australia, appropriated £10,000, or $50,000, for ten years' research work. The work was extended another year at an additional cost. This has been published in four large volumes. The research work done in Australia has been the most complete, the most thorough and efficient of any campaign waged for the solution and cause of any disease or pest. The Editor of Better Fruit has been in constant correspondence with Professor D. McAlpine and has received one of each of his four Progress Reports. Conditions under which the trouble occurs in the Northwest are seemingly very similar, and the suggestions of control as outlined by Mr. McAlpine, where practiced in the Northwest, in the opinion of the Editor have been effective in reducing Bitter Pit or Core Rot to a minimum. This article is of course a brief summary of the principal features in the cause and control, as worked out by Professor McAlpine and his assistants, and as before stated is the most thorough campaign ever put up for the solution of any pest and its control. Therefore the Editor believes every fruit grower in the Northwest who is troubled with Bitter Pit or Core Rot will find this article not only very instructive but very valuable.]

WHEREVER apples are grown on a commercial scale this disease is more or less prevalent. In Australia there are some valuable export varieties, such as Cleopatra, which are so susceptible that they have been cut down and replaced by other varieties. In the United States of America the Baldwin variety is so subject to attack that the disease is actually known as "Baldwin spot." In a recent American publication it is stated that, "Unless a remedy for this trouble is to be found, the indications are that Baldwins will sooner or later need to be replaced by some other variety of the same season and quality which is not affected by the spot." There is consequently a keen desire on the part of growers to know the cause of the disease, in order, if possible, to devise measures for its prevention or mitigation. By this means alone may certain valuable varieties be retained under cultivation.

In my previous report I have offered alternative views as to the cause of bitter pit, viz.: (a) Concentration of cell sap in the tissues of the apple and consequent local death of the parts. (b) Over-pressure of water in the tissues, leading to local rupture and subsequent death of the parts.

The first explanation was indicated by certain of my observations. The brown flecks of the pit, when examined, always contained less water than the surrounding healthy tissue, and it appeared possible that the concentration of the cell sap involved in loss of water might have reached a point where the acids, tannins and other constituents acted injuriously upon the living protoplasm, causing its death. The sap concentration theory of the disease also received support from its point of occurrence on the apple pit generally appears in the first instance on the upper half of the fruit and toward the "eye" end. As the openings in the skin of the fruit are much more numerous toward the "eye" end than on the basal portions, the larger number of openings at the "eye" end would obviously allow more active transpiration, and consequently might render easier an undue concentration of the cell sap, leading to development of the pit.

The further investigations which I have subsequently been able to make into the occurrence of pit lead me to abandon an undue concentration of the cell sap as the probable cause of the disease. I am of opinion that over-pressure of water in the tissues, leading to local rupture and subsequent death of the parts, furnishes the most probable explanation of bitter pit. Histological examination of the tissues of the apple, and the results of field experiments, pruning tests and climatological observations concur in supporting the view that over-pressure of water is the real cause. The diminished supply of water in the flecks of bitter pit is the result of cell rupture and death of the parts—not its cause.

The following observations support this view: (1) When the apple fruit is mostly confined to the main upright branches and produced on fruit-spurs, the bitter pit is usually increased. Under these conditions the strong flow of sap might reasonably be supposed to burst the thin walls of the pulp cells and produce the effect. (2) In a young and vigorous growing tree, bearing only a few apples of rank growth, all the fruit is often pitted. The rank growth will cause rapid tension of the cell wall, and this may reach the breaking point when the pressure is distributed only through a few apples. (3) When a tree in full bearing, has only a light crop, and the apples are comparatively large, then the tendency to bitter pit is greater. The fewer apples in this instance would get a larger proportion of sap, as evidenced by their larger size. Instances have already been given where Cleopatra trees only showed bitter pit in the clusters of fruit at the tips of the branches, and the larger apple in the center of the cluster was invariably the worst. Superabundance of sap is associated with the overgrown apple and the development of pit. (4) When the fruit of a susceptible variety is picked and graded, it is found, as a rule, that the larger the fruit the more liable it is to pit. Thus, in the produce of 39 Cleopatra trees, while apples two inches in diameter had only one per cent of pit, those three and one-quarter inches in diameter had 61 per cent of pit. The greater growth in the larger apple relatively to the smaller would tend to distend the pulp cells and ultimately burst them. (5) When the strong flow of sap is checked by cincturing it is found that the pit is reduced. This favors the view that the over-pressure of the sap in a variety unable to withstand the strain may be exciting the cause. Root pruning is a well-known means of checking the growth and inducing fruitfulness, but owing to the danger in our variable climate of root-pruned trees suffering from a diminished water supply at a critical period of their growth, no satisfactory experiments were carried out. (6) Irrigation experiments bear out the view that over-watering is a sure means of producing pit. When apple trees are heavily watered, and particularly late in the season when the fruit is ap-

proaching its full development, there is a much higher percentage of pit than when light watering is adopted. (7) When the fruit is produced on laterals where every apple, as a rule, has room to develop properly and there is no strong flow of sap as in the upright branches, the amount of pit is appreciably lessened. (8) As shown in a previous report, wherever bitter pit occurs the vascular network at the boundary between the pulp cells and the skin is ruptured. The pressure exerted will also be sufficient to burst the adjoining pulp cells, and thus there is a strong presumptive evidence that the bursting of the network by over-pressure of the water, more particularly toward the apex or eye end of the apple, is accompanied by the rupture of the pulp cells.

This is approximately called a constitutional disease, since the root of the trouble really lies in the artificial nature of our modern apple. It has been derived from the small, sour and hardy wild crab, and the large size, the succulence, and the sweetness have been obtained at the expense of the hardy nature of its ancestor. The fibre is now soft and flabby to render the flesh as juicy as possible, and this weakening of the fibre has practically thrown the whole burden of the skeleton upon the pulp cells. This burden was formerly shared by the vascular bundles, but now the distended pulp cells, like so many little balloons (filled with sap instead of gas), have to prevent the structure from collapsing. That it does collapse here and there, producing the brown flecks in the flesh, is not to be wondered at, and the problem of bitter pit, like that of modern civilization, is to strengthen the constitution against the forces which tend to weaken it.

I submitted a summary, giving the results of my work on the cause of bitter pit to Professor Lanong, of America, the distinguished author of "The Living Plant." He gave it his careful attention and replied: "Your conclusions certainly look to me very reasonable and probable, and as far as I can tell, seem wholly consistent with our knowledge of osmotic and sap-pressure phenomena. I would have to give, however, a great deal more study to the subject than is practicable to make any suggestion, after the exhaustive work which you have done upon the subject."

The various factors which increase or diminish bitter pit react upon the vascular system of the apple, which has been fully described in previous reports. The pit originates beneath the skin, where the symmetrically formed network of vessels surround the outer layer of pulp cells and forming the boundary between skin and pulp is situated. Wherever bitter pit occurs this network is ruptured, owing to the pressure exerted by the too-rapid growth. The pulp cells at first disclosed by the ruptured meshes of the net, are likewise burst and death ensues. It is this wonderful network of vessels beneath the skin, forming distributing channels to regulate the pressure of the sap, that explains the occurrence of pit in spots or patches. Hence the rupture of the vascular network here and there, and of the adjoining pulp cells in localized spots, due to over-pressure of the sap, is the exciting cause of bitter pit, and the oxidizing enzyme in the presence of tannin causes the group burst cells to become brown.

[Continued next month]

The Oregon State Fair will be held at Salem, Oregon, September 24th to 29th, inclusive. Horticulture is one of the prominent features of the fair.

Grape Culture

By W. Obermeyer, Emmett, Idaho

IN this article on grape culture I shall confine myself to a talk on the native varieties suited to the climate of Southern Idaho. I have some of the European varieties of bearing age, but they have not proven satisfactory, and I do not recommend them for Southern Idaho. Our climate is too severe for them as a commercial crop.

In planting a vineyard, about the first thing to consider is the matter of location; experience has proven that the best fruit is grown on hill slopes, and sandy ground is preferred to any other. If the soil is not naturally fertile enough, it should be made so by the plowing under of any legume crop, or the addition of barnyard manure. Next in order is to determine the variety to grow. The Concord is the best flavored and the best seller, yet this variety requires a rather long season to mature its fruit, and if you have any doubt at all as to your length of season, plant the Moore's Early, or the Worden, both of which are excellent grapes and almost equal to the Concord in hardiness and flavor. Moore's Early is very early, ripening here in the Payette Valley almost a month ahead of the Concord; the Worden is midway between. These three varieties are black grapes, and good sellers. For commercial varieties confine your planting to these three.

Having determined the variety best suited to your locality, get one-year-old No. 1 vines from a reliable nursery, or grow the plants from cuttings. Set the plants 10 by 10 feet apart, and give the best of care. Irrigate when necessary. It is usually best to grow some cultivated crop between the rows the first two years, and the care that will make a big crop of potatoes or melons is just the care the young vines require. If your young vines have had the right care they are ready, after the second season, to be trellised. It is the common practice to furnish two sizes (No. 9 or No. 10) black wire strung on posts 30 feet apart. The first wire 2½ feet from the ground, and the other 5 feet high. The end post should be set three feet in the ground and be well braced, so as to be able to withstand the strain of a heavy crop. Probably the pruning hasn't bothered you much as yet. The first year's growth was not heavy, and you have pruned to a single cane, and cut that back to a few buds; the second season's growth was better, and you will leave one long cane to be tied to the top wire, and perhaps two short canes to be run out along the lower wire. The vines will bear a fair crop the third season and make a good wood growth. The next spring you may leave four canes for fruiting. Keep, as a permanent trunk, the vine that you led to the top wire the previous season, cutting off your surplus wood as close to the permanent stalk as possible. Thus you always have a neat, clean vine, easy to prune. Tie the canes out along the wire, fastening them securely so the wind won't whip them around. Do not make a tie so tight that your vine will choke when it begins to enlarge; leave room for expansion. I will conclude with a few general remarks. The Knieffen system of pruning is probably the easiest system and is very satisfactory. On sloping, sandy ground grape vines can stand a lot of irrigation and profit by it. On valley bottoms, especially where the water table is near the surface, great care should be used in watering. It is safe, however, to keep the ground reasonbly moist. Cultivation can usually be stopped in midsummer so as to allow the canes to ripen. All of that part of the current season's growth that has not matured will winter kill.

Probably barnyard manure will supply all the requirements of the vines as to fertilization. Crimson clover could be sowed, after cultivation ceases, and plowed under the succeeding spring. I have tried this, and it is a success. Many growers use rye as a cover crop. A vineyard properly cared for will last practically forever.

Farm Labor Organization Plans

U. S. Department of Agriculture

UNDER the government plan for the organization of farm labor, the details of which were announced by the U. S. Department of Agriculture recently, provision is made for nation-wide co-operation in the solution of the farm help problem. The work of organization already has been started in about forty states, and it is expected that eventually every community in the United States will be reached. It is believed that the resultant utilization of emergency labor will begin to have an appreciable effect on the farm labor situation before the season has far advanced. Meanwhile, the immediate and acute problem of supplying labor for the harvests, now beginning in the Southwest, is being handled, so far as the United States government's services are concerned, through the existing employment service of the U. S. Department of Labor, which will continue to handle such problems of mass mobilization under the new plan as it has in the past.

Federal and state co-operation is based on close co-operation on the part of the U. S. Department of Agriculture and the U. S. Department of Labor with state committees on national defense charged with labor matters, with the state agricultural colleges, with the county agents, and with county and local or township labor committees or representatives to be established in every locality. The Department of Agriculture will represent the federal authorities in determining farm labor needs and in assisting in organizing all available farm labor in the rural districts. The U. S. Department of Labor will devote its attention to organizing labor in urban communities and industrial regions, and will co-operate with the farm labor forces where necessary by obtaining extra labor from the populous centers.

The plan provides for strictly local handling of all labor problems that can be adjusted locally. The fundamental unit of the organization is the "community man" who, with the assistance of such committees as he may appoint, canvasses his own neighborhood, finds out what farmers need help, and what men are available for supplying the local need, and effects such adjustments as can be made locally. If, after all local adjustments have been made, there remains either a deficit or a surplus of labor, he reports to the "county man," whose business it is to effect adjustments between the several communities in his county. The county man, in turn, reports any deficit or surplus to the "state man," who canvasses the situation for the state as a whole and reports to the Department of Agriculture, which, in close co-operation with the Department of Labor, is charged with the distribution of mobile labor for the country as a whole.

Thus each unit in the system acts as a clearing house for its own territory, reporting to the units higher up only when it needs help or has help to offer. The plan provides that supplemental

reports shall be submitted by each community man whenever changes in the local labor situation make desirable further adjustments that cannot be met with the material at hand, or when a surplus of labor develops which he cannot use.

A great many retired farmers, of whom there are 700,000 in the country, may be available for emergency service under this plan of farm labor mobilization. The plans contemplate also the drawing of emergency labor from the cities under the immediate direction of the Department of Labor, the effective utilization of college students and school boys, and, if necessary, the assignment of volunteer women and girls to rural tasks connected particularly with feeding and caring for harvest hands or other extra labor, or with farm canning or drying of surplus perishable products. In other words, the plan contemplates supplying assistance not merely for field operations but to farm women during their season of heaviest domestic duties.

The Wastefulness of Swarming

U. S. Department of Agriculture

THE old-time beekeeper boasted of the number of swarms which issued from his hives, but the modern beekeeper knows that swarming is one of his worst obstacles to producing a large crop. The modern beekeeper knows from experience that after he has given all his energy to getting every colony as strong as possible at the beginning of the honey-flow, he must not permit the bees then to spoil it all by dividing their forces.

Of course, it is impossible to do anything toward controlling swarming when the bees are in a box or "gum," and this is the chief reason why bees in a movable-frame hive are more profitable. It is also unfortunately true that in spite of the beekeeper's most strenuous efforts, colonies will sometimes swarm. In that event the beekeeper makes the most of a bad situation by keeping the forces together in another way.

If swarming occurs when honey is coming in, the hive should be at once removed to a new place and a new hive placed in the old location, the bee specialists of the U. S. Department of Agriculture advise. The swarm is now hived in this new hive and, because it is in the old location, all returning field bees from the colony join the swarm and the population is kept up. Later on there are various ways of reducing the parent colony still more, for by this means the issuing of worthless after-swarms is prevented.

The beekeeper who desires to get the greatest possible crop does not permit even one swarm to issue if he can help it. When swarming time arrives, he examines every colony once a week. If he finds queen cells with eggs or small larvae in them, he cuts every one out and thus makes it necessary for the bees to build other cells, if they still persist in their efforts to swarm. If, however, he finds larger cells with old larvae he knows that the impulse to swarm has developed too far, so he must satisfy it in some way. He may make an artificial swarm—at his convenience and not at that of the bees—or if he is a producer of comb-honey he may cut out all the queen cells and cage the queen for ten days until they get over their "swarming fever."

The skill of the beekeeper can usually be measured by the results of his work in curbing swarming. The poetry which others see in issuing swarms is entirely lost on a good beekeeper. The methods of swarm control are given in Farmers' Bulletin 503, "Comb Honey," which may be obtained on request from the United States Department of Agriculture.

High Cost of Food Necessitates Judicious Management.

Purchasing food supplies and planning and preparing three meals a day has always been a problem, but with the increase in food prices the problem is becoming more difficult every day. The abnormal price of certain foods leads the careful housewife to seek substitutes, but if she does not know the

relative values of the different foods she cannot make her substitution intelligently, A knowledge of the part that each of the different classes of foods performs in the body upkeep is essential. Without this knowledge serious mistakes may be made. Miss Bab Bell of the Missouri College of Agriculture makes a few suggestions relative to decreasing the cost of living. (1) Make a thorough study of the different classes of foods and the function of each in the body. (2) Plan meals carefully, so that foods are not duplicated. For instance, do not serve Irish and sweet potatoes in the same meal; cheese and meat; rice and patotoes; spinach and lettuce; navy beans and meat. (3) Substitute, in part, corn starch for eggs; rice for potatoes; meat substitutes for meat; some good oil for olive oil; some product for butter, especially in cooking; cornmeal for wheat flour. Milk is one of the best foods and consequently can be substituted for higher priced foods. Skim milk has a high protein value.

The cost of living may be reduced by (1) Purchasing food supplies in large quantities when a good storeroom is available, and by purchasing foods in season. (2) Preparing the exact amount of food needed. Some foods cannot be warmed or made over. (3) Planning meals to utilize all "left overs" and thus reducing the waste which ordinarily goes to the garbage can. (4) Training children, and adults as well, not to waste foods at the table by leaving quantities on their plates. (5) Doing your own marketing, if possible. (6) Growing vegetables on every foot of ground available and by canning fruits and vegetables; storing eggs, butter and other products to be used during winter.

A Late O. A. C. Appointment

Frank H. Lathrop, who has had special training and extended experience in the habits, injury and control of apple plant lice in the eastern, central and southern parts of the United States, has been appointed research assistant in entomology at the Oregon Agricultural College Experi-

ment Station. He will conduct laboratory and field work in entomology, first specializing in aphis with a view to more effective control of this pest in Oregon orchards. He was graduated from the Clemson, South Carolina, Agricultural College, took the Master's Degree at Ohio State University, where he was graduate assistant and research fellow in entomology and zoology. He was also research assistant in these subjects at the South Carolina Station and later at the New York Experiment Station.

Valuable Bulletins

Gardeners, poultrymen, housewives, and all who are "doing their bit" in the nation-wide food production campaign, will find it possible to largely increase their efficiency by securing and studying some of the bulletins prepared by the Oregon Agricultural College, Corvallis, Oregon, contained in the following list. They are carefully compiled and the instruction and information contained in them is dependable.

118. Ammonification and Nitrification Studies of Certain Types of Oregon Soils.
119. A Report of the Experimental and Demonstration Work on the Substation Farms at Moro, Burns, Redmond and Metolius.
140. Economical Use of Irrigation Water.
142. The Culture of Small Fruits on Irrigated Sandy Land.
5. Incubating and Brooding Chickens.
83. Principles of Breadmaking.
91. Insect Pests of Truck and Garden Crops.
99. Fowl Tuberculosis.
106. Farm Butter Making.
107. Care of Milk and Cream.
110-111. Food for the Family.
126. How to Conduct a Fly Campaign.
127. Breeds of Chickens.
146. Strawberry.
147. Oregon Station Trap Nest.
157. Feeding for Eggs.
158. Trapping Moles for Market.
159. Housing of Chickens.
165. Loganberry.
167. Programs and Suggestions for Study Clubs in Home Economics.
183. Home Co-operators' Demonstration Project.
184. Potato Growing in Oregon.
185. Improvement of Seed Potato.
186. Potato Diseases.
190. Preserving Eggs.
192. Brambles.
218. Methods of Cleaning.
222. The School Luncheon.
201. Oregon Rural Credits.
207. Field Bean.
203. Clover Insects.

Emergency Circulars:
- Cold Pack Method of Canning.
- Foods—Preparedness.
- Home Vegetable Garden.
- The Hen in Town.

Are You Proud of Your Front Yard?

The improvement of rural highways and the building of good roads lay a new responsibility upon every farmer. It means that there will be a greatly increased amount of traffic passing by his homestead; it will bring him more closely in touch with the outside world, including citizens from the immediate neighborhood, from the surrounding counties and indeed from many parts of other states. The farmer and his

home life are now brought more directly to the attention of the general public. Under these circumstances, H. F. Major of the Missouri College of Agriculture suggests that he take more pride in the development of his home grounds. "A man is known by the company he keeps," so the character of a man is judged by his home life and the atmosphere with which he surrounds himself. The improvement of the home grounds does not necessarily imply spending great sums or building an extensive "Show Place" decorated with architectural furnishings and formal gardens. It means treating the yard as an out-of-door living room; as a part of the house. It means, keeping it clean and neat and comfortable and cheerful. It should be decorated with fine trees, beautiful flowering shrubs, and with annual and perennial flowers that fill the soul with gladness and make home a lovable spot surrounded by endearing associations that tug at the heart-strings and give the full meaning of "Home, Sweet Home."

Members Fruit Growers' Agency

The following comprises a list of the selling concerns and associations that are members of the Fruit Growers' Agency for 1917, making the Fruit Growers' Agency the strongest and largest organization of its kind in Aemerica, making the Fruit Growers' Agency for the first time strong enough to be effective in carrying on the excellent work started in the year 1916, with which the growers are familiar through the various articles of information relative to the Fruit Growers' Agency that have appeared in BETTER FRUIT and other publications. If there is any association or selling concern that has not joined they should do so without delay:

Cashmere Fruit Growers' Union, Cashmere, Washington.
Indian Cache Ranch, Lewiston, Idaho.
Methow Pateros Unit, Pateros, Washington.
Brewster District Unit, Brewster, Washington.
C. E. Berry, College Place-Blalock Growers' Association, R. F. D. No. 2, Walla Walla, Washington.
Yakima Valley Fruit Growers' Association, North Yakima, Washington.

Mosier Fruit Growers' Association, Mosier, Oregon.
Northwestern Fruit Exchange, Stuart Building, Seattle, Washington.
Idaho-Oregon Fruit Growers' Association, Payette, Idaho.
Okanogan Growers' Union, Okanogan, Washington.
North Pacific Fruit Distributors, Spokane, Washington.
Rogue River Fruit and Produce Association, Medford, Oregon.
Wenatchee North Central Fruit Distributors, Wenatchee, Washington.
Wenatchee Apple Land Co., Paulsen Building, Spokane, Washington.
White Bros. & Crum, North Yakima, Washington.
Blalock Fruit and Produce Co., Walla, Walla, Washington.
Wenatchee Produce Company, Wenatchee, Washington.
Northern Fruit Company, Wenatchee, Washington.
E. Wagner & Son, Wenatchee, Washington.
Clarke-Oliver Apple Company, Wenatchee, Washington.
Wenatchee Growers' Exchange, Wenatchee, Washington.
Sunnyslope Fruit Exchange, Wenatchee, Washington.
Richey & Gilbert Company, Toppenish, Washington.
Hood River Fruit Company, Hood River, Oregon.
Cashmere Apple Company, Cashmere, Washington.
Earl Fruit Company of the Northwest, Mohawk Building, Spokane, Washington.
White Salmon Valley Growers' Association, White Salmon, Wasshington.
Dennis, Kimball & Pope, Inc., Medford, Oregon (E. M. McKeany).
Omak Fruit Growers, Inc., Omak, Washington.
Yakima Commercial Club Association, North Yakima, Washington.
Willamette Valley Fruit Exchange, Alvadore, Oregon.
Peshastin Fruit Growers' Association, Peshastin, Washington.
Growers' Service Company, North Yakima, Washington.
Dufur Orchard Co-Owners' Company, The Dalles, Oregon.
Montana Fruit Distributors, Hamilton, Montana.
Baker-Langdon Orchard Company, Walla Walla, Washington.
Skookum Packers' Association, Leavenworth, Washington.
Apple Growers' Association, Hood River, Oregon.

These Suggestions Will Help in the Fly Campaign.

The Missouri College of Agriculture has received many requests for suggestions in conducting fly campaigns. Observation of the following steps will bring effective results: (1) Kill as many flies as possible when they appear in spring. These first flies are the parents of the millions of germ-laden flies that will make life miserable throughout the summer. One fly killed early in the spring is equal to millions killed in August or September. (2) Endeavor to prevent flies from breeding or feeding on the premises. Some flies will escape,

because they will breed in decaying vegetable matter or in the droppings of animals in the pastures. However, these will be almost negligible. (3) Fly traps are essential. They catch the flies coming from breeding places and thus prevent their migrating to the house. (4) Enlist the co-operation of all dealers in food supplies. Show them the danger from flies and what may result from unsanitary surroundings of their premises. If necessary, patronize only those dealers who keep their premises and their products properly screened. They will soon clean their premises and eliminate flies if the campaign is brought to them in this financial light. (5) Endeavor to obtain community co-operation in the fly campaign. Do not be discouraged if a few people cannot be induced to clean up their premises. As soon as they see that the campaign is effective they will readily co-operate.

Garden Plan Saves Labor.

A little time spent in planning a garden will save a great deal of subsequent labor. C. G. Carpenter of the Missouri College of Agriculture suggests that the rows of vegetables run north and south, so that one side will receive sunlight in the morning and the other in the afternoon. This is the best arrangement wherever it is possible. The slope of the garden, if it is on a hillside, may prevent running the rows north and south. It is also advisable to space the rows so that horse-drawn implements can be used. Sometimes it pays to arrange even such small plants as lettuce and radishes so that they may be cultivated with labor-saving implements. In general, planting should be begun on one side of the garden and continued to the other. This will enable the gardener to keep the weeds down on the unplanted area with minimum labor. Vegetables planted at the same time and requiring similar cultivation should be grouped in adjacent rows. However, the time of planting is more important than the kind of cultivation required. Rhubarb, horseradish, asparagus, winter onions and other plants which occupy the ground longer than a year should be set apart. Parsnips, salsify and similar crops should be placed near the perennials. Vegetables which require only a short growing season, such as onions, cabbage, lettuce, radishes, peas and beets, and second plantings of these crops may follow in order as planting proceeds across the garden.

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